ICS 31.060.50 SLOVENSKÁ TECHNICKÁ NORMA Jún 2017

| STN | **Nepremenné kondenzátory na použitie v elektronických zariadeniach. Časť 4: Rámcová špecifikácia. Nepremenné hliníkové elektrolytické kondenzátory s tuhým (MnO2) a netuhým elektrolytom.** | **STN EN 60384-4**<br><br>35 8291 |
|---|---|---|

Fixed capacitors for use in electronic equipment - Part 4: Sectional specification - Fixed aluminium electrolytic capacitors with solid (MnO2) and non-solid electrolyte

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 05/17

Obsahuje: EN 60384-4:2016, IEC 60384-4:2016

Oznámením tejto normy sa od 16.09.2019 ruší
STN EN 60384-4 (35 8291) z januára 2008

EUROPEAN STANDARD **EN 60384-4**

NORME EUROPÉENNE

EUROPÄISCHE NORM October 2016

ICS 31.060.50 Supersedes EN 60384-4:2007

English Version

# Fixed capacitors for use in electronic equipment - Part 4: Sectional specification - Fixed aluminium electrolytic capacitors with solid ($MnO_2$) and non-solid electrolyte (IEC 60384-4:2016)

Condensateurs fixes utilisés dans les équipements électroniques - Partie 4: Spécification intermédiaire - Condensateurs électrolytiques à l'aluminium, à électrolyte solide ( $MnO_2$) et non solide
(IEC 60384-4:2016)

Festkondensatoren zur Verwendung in Geräten der Elektronik - Teil 4: Rahmenspezifikation - Aluminium-Elektrolyt-Kondensatoren mit festen ($MnO_2$) und flüssigen Elektrolyten
(IEC 60384-4:2016)

This European Standard was approved by CENELEC on 2016-09-16. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.


European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**



Ref. No. EN 60384-4:2016 E

**EN 60384-4:2016**

## European foreword

The text of document 40/2467/FDIS, future edition 5 of IEC 60384-4, prepared by IEC/TC 40 "Capacitors and resistors for electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60384-4:2016.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2017-06-16
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-09-16

This document supersedes EN 60384-4:2007.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

## Endorsement notice

The text of the International Standard IEC 60384-4:2016 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

| | | |
|---|---|---|
| IEC 60384-18 | NOTE | Harmonized as EN 60384-18. |

# Annex ZA
(normative)

## Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60063 | - | Preferred number series for resistors and capacitors | EN 60063 | - |
| IEC 60068-1 | 2013 | Environmental testing -- Part 1: General and guidance | EN 60068-1 | 2014 |
| IEC 60068-2-54 | 2006 | Environmental testing - Part 2-54: Tests - Test Ta: Solderability testing of electronic components by the wetting balance method | EN 60068-2-54 | 2006 |
| IEC 60384-1 | 2016 | Fixed capacitors for use in electronic equipment - Part 1: Generic specification | EN 60384-1 | 2016 |
| IEC 60417 | - | Graphical symbols for use on equipment. Index, survey and compilation of the single sheets. | - | - |
| IEC 61193-2 | 2007 | Quality assessment systems -- Part 2: Selection and use of sampling plans for inspection of electronic components and packages | EN 61193-2 | 2007 |
| ISO 3 | - | Preferred numbers; Series of preferred numbers | - | - |

IEC 60384-4

Edition 5.0 2016-08

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

## Fixed capacitors for use in electronic equipment – Part 4: Sectional specification – Fixed aluminium electrolytic capacitors with solid ($MnO_2$) and non-solid electrolyte

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IEC 60384-4:2016-08(en-fr)

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 31.060.50

ISBN 978-2-8322-3552-2

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –

## Part 4: Sectional specification – Fixed aluminium electrolytic capacitors with solid ($MnO_2$) and non-solid electrolyte

## FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
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International Standard IEC 60384-4 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment.

This fifth edition cancels and replaces the fourth edition published in 2007. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Revision of the structure in accordance with ISO/IEC Directives, Part 2:2011 (sixth edition) to the extent practicable, and harmonization between other similar kinds of documents;
b) In addition, Clause 4 and all the tables have been reviewed in order to prevent duplications and contradictions.

The text of this standard is based on the following documents:

| FDIS | Report on voting |
|---|---|
| 40/2467/FDIS | 40/2476/RVD |

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

The list of all parts of the IEC 60384 series, under the general title *Fixed capacitors for use in electronic equipment*, can be found on the IEC website.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

# FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –

# Part 4: Sectional specification – Fixed aluminium electrolytic capacitors with solid ($MnO_2$) and non-solid electrolyte

## 1 General

### 1.1 Scope

This part of IEC 60384 applies to fixed aluminium electrolytic capacitors with solid ($MnO_2$) and non-solid electrolyte primarily intended for d.c. applications for use in electronic equipment. It covers capacitors for long-life applications and capacitors for general-purpose applications.

Capacitors for fixed surface mount aluminium electrolytic capacitors are not included but they are covered by IEC 60384-18.

Capacitors for special-purpose applications may need additional requirements.

### 1.2 Object

The object of this standard is to prescribe preferred ratings and characteristics and to select from IEC 60384-1:2016 the appropriate quality assessment procedures, tests and measuring methods and to give general performance requirements for this type of capacitor. Test severities and requirements prescribed in detail specifications referring to this sectional specification shall be of equal or higher performance level, because lower performance levels are not permitted.

### 1.3 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60063, *Preferred number series for resistors and capacitors*

IEC 60068-1:2013, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-54:2006, *Environmental testing – Part 2-54: Tests – Test Ta: Solderability testing of electronic components by the wetting balance method*

IEC 60384-1:2016, *Fixed capacitors for use in electronic equipment – Part 1: Generic specification*

IEC 60417, *Graphical symbols for use on equipment*

IEC 61193-2:2007, *Quality assessment system – Part 2: Selection and use of sampling plans for inspection of electronic components and packages*

ISO 3, *Preferred numbers – Series of preferred numbers*